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EXAMINER

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/599,802
Filing Date: October 10, 2006
Appellant(s): MUKHERJEE ET AL.

John R. Witcher, III
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/16/2010 appealing from the Office action mailed 3/16/2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the

subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner.

Claim Rejection – 35 U.S.C 112 - Examiner is withdrawing 35 USC 112 for using the term used in claim 5 and 22 "in a serial fashion".

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is incorrect. Applicant claim number 2-35 does not match with the claim number filed 10/10/2006 claim number 1-34.

(8) Evidence Relied Upon

EP 1059773 A2	Itai	01/2000
US Pub. No. 2005/0232224	Belshner	10/2005
US 6,788,702	Garcia-Luna-Aceves	09/2004
US 6,542,476	Elizondo	04/2003
US Pub. No. 2003/0067873	Fuhrmann	04/2003
US Pub. No. 2004/0176098	Besset-Bathias	09/2004

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
1. Claims 1, 6-8, 11-13, 16, 17, 18, 23, 24, 25, 28, 29, 30, 33, 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itai et al. European Patent No. EP 1059773 A2 in view of Belshner et al. Pub. No. 20050232224

Regarding Claim 1, Itai discloses exchanging scheduling information with at least one compatible communication node in a wireless communication network (Para 18, wireless mesh topology network having mutually interconnected nodes with line of sight communication with at least one neighbor. Every node has scheduled slots with which to exchange control information with each of its neighbors); determining a communication schedule for communications with the at least one compatible

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communication node based on the scheduling information (Para 18 and 23, the node receives the request to transmit grants or denies transmissions. Part of the grant includes a schedule, selected from the requester's schedule, for when to transmit the data); and communicating with the at least one compatible communication node based on the communication schedule (Para 20, each node must communicate with each of its neighbor with information about free time in the node's schedule). Itai differs from claimed invention in not specifically teaching independently determine communication schedules. However, Belshner discloses that the processing of a communication time schedule of a network node is based on its local clock cycle. The length of a local communication cycle therefore depends on the local clock cycle and the time schedule to the communication time schedules of at least one other network node prior to being integrated as active network node (Para 25 and Abstract). Therefore, it is obvious to one having ordinary skill in the art at the time when the invention is made that facilitating independently determination of communication schedules as per teaching of Belshner so as to increase in the efficient use of the spectrum at a given spatially covered region.

Regarding Claim 18, Itai discloses at least one wireless communication interface (Para 18, wireless mesh topology network); exchange scheduling information with at least one compatible communication node in a wireless communication network (Para 18, wireless mesh topology network having mutually interconnected nodes with line of sight communication with at least one neighbor. Every node has scheduled slots with which to exchange control information with each of its neighbors); determine a communication schedule for communications with the at least one compatible communication node

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based on the scheduling information (Para 18 and 23, the node receives the request to transmit grants or denies transmissions. Part of the grant includes a schedule, selected from the requester's schedule, for when to transmit the data); and communicate with the at least one compatible communication node based on the communication schedule (Para 20, each node must communicate with each of its neighbor with information about free time in the node's schedule). Itai differs from claimed invention in not specifically teaching a control system associated with the at least one wireless communication interface and wherein communication nodes in the wireless communication network independently determine communication schedules with other compatible communication nodes. However, Belshner discloses that before release by a superior control unit (not shown in detail), the control unit performs all required settings for participation in the communication on the network node (Para 29). Belshner further discloses that the processing of a communication time schedule of a network node is based on its local clock cycle. The length of a local communication cycle therefore depends on the local clock cycle and the time schedule to the communication time schedules of at least one other network node prior to being integrated as active network node (Para 25 and Abstract). Therefore, it is obvious to one having ordinary skill in the art at the time the invention is made that a control system associated with the at least one wireless communication interface and wherein communication nodes in the wireless communication network independently determine communication schedules with other compatible communication nodes as per teaching of Fuhrmann so as to increase in the efficient use of the spectrum at a given spatially covered region.

Regarding Claim 6 and 23, Belschner disclose further wherein the communication schedule provides a schedule for forwarding traffic to or from the at least one compatible communication node (Para 8 and 19).

Regarding Claim 7 and 24, Belschner disclose further wherein the communication schedule provides a schedule for exchanging scheduling information with the at least one compatible communication node (Para 22).

Regarding Claim 8 and 25, Belschner disclose further wherein the communication schedule provides a schedule for forwarding traffic to or from the at least one compatible communication node and for exchanging scheduling information with the at least one compatible communication node (Para 8, 19 and 22).

Regarding Claim 11 and 28, Itai discloses further wherein the communication schedule defines transmission opportunities during which communications with the at least one compatible communication node are scheduled to take place (Para 18).

Regarding Claim 12 and 29, Belschner disclose wherein the transmission opportunities are variable in length (Para 72).

Regarding Claim 13 and 30, Belschner disclose wherein the lengths of the transmission opportunities are based on communication or scheduling related parameters (Para 72).

Regarding Claim 16 and 33, Belshner discloses further wherein the scheduling information comprises communication parameter information, and the communication schedule is determined, in part, based on the communication parameter information (Para 83).

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Regarding Claim 17 and 34, The method of claim 1 wherein the scheduling information comprises at least one of collision information pertaining to past transmission opportunities and susceptibility information pertaining to future available transmission opportunities that may likely be subjected to interference (Para 13).

2. Claims 2-4, 14, 15, 19-21, 31, 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itai et al. European Patent No. EP 1059773 A2 in view of Belshner et al. Pub. No. 20050232224 and further in view of Garcia-Luna Aceves et al. Patent No. 6788702 (Refer to as Garcia)

Regarding Claim 2 and 19, Itai and Belshner differs from claimed invention in not specifically teaching wherein communications with each of the at least one compatible communication node are established over at least one corresponding communication link, which does not contend with other communication links in the wireless communication network during scheduled communications. However, Garcia discloses that avoid collisions by assuming nodes are synchronized with their neighbors, have knowledge of their neighbors' schedules and are able to receive from multiple transmitting neighbors simultaneously (Col 5 L 44-49). Therefore, it is obvious to one having ordinary skill in the art at the time the invention was made that communications with each of the at least one compatible communication node are established over at least one corresponding communication link, which does not contend with other communication links in the wireless communication network during scheduled communications as per teaching of Garcia so as to increase the efficiency.

Regarding Claim 3 and 20, Itai and Belshner differs from claimed invention in not

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specifically teaching wherein communications with the at least one compatible communication node are established over a plurality of communication links, which do not contend with each other or with other communication links in the wireless communication network during scheduled communications. However, Garcia discloses that avoid collisions by assuming nodes are synchronized with their neighbors, have knowledge of their neighbors' schedules and are able to receive from multiple transmitting neighbors simultaneously (Col 5 L 44-49). Therefore, it is obvious to one having ordinary skill in the art at the time the invention was made that communications with the at least one compatible communication node are established over a plurality of communication links, which do not contend with each other or with other communication links in the wireless communication network during scheduled communications as per teaching of Garcia so as to increase the efficiency.

Regarding Claim 4 and 21, Itai and Belshner differs from claimed invention in not specifically teaching wherein the at least one compatible communication node is a plurality of compatible communication nodes and at least one communication schedule is established for controlling communications with each of the plurality of compatible communication nodes. However, Garcia discloses that avoid collisions by assuming nodes are synchronized with their neighbors, have knowledge of their neighbors' schedules and are able to receive from multiple transmitting neighbors simultaneously (Col 5 L 44-49). Therefore, it is obvious to one having ordinary skill in the art at the time the invention was made that communication node is a plurality of compatible communication nodes and at least one communication schedule is established for

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controlling communications with each of the plurality of compatible communication nodes as per teaching of Garcia so as to increase the efficiency.

Regarding Claim 14 and 31, Itai and Belshner discloses transmission opportunity but differs from claimed invention in not specifically teaching wherein certain packets are scheduled to hop through a plurality of compatible communication nodes. However, Garcia discloses channel access used in multihop wireless network consists of establishing transmission schedules allocating stations to different times and data channels (Col 4 L 58-67). Therefore, it is obvious to one having ordinary skill in the art at the time the invention was made wherein certain packets are scheduled to hop through a plurality of compatible communication nodes as per teaching of Garcia so as to increase the efficiency.

Regarding Claim 15 and 32, Itai and Belshner schedule to occur during a given transmission but differs from claimed invention in not specifically teaching wherein communications with a plurality of compatible communication nodes. However, Garcia discloses channel access used in multihop wireless network consists of establishing transmission schedules allocating stations to different times and data channels (Col 4 L 58-67). Therefore, it is obvious to one having ordinary skill in the art at the time the invention was made that communications with a plurality of compatible communication nodes as per teaching of Garcia so as to increase the efficiency.

3. Claims 5 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itai et al. European Patent No. EP 1059773 A2 in view of Belshner et al. Pub. No.

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20050232224 and further in view of Garcia-Luna Aceves et al. Patent No. 6788702

(Refer to as Garcia) and further in view of Elizondo Patent No. 6542476

Regarding Claim 5 and 22, Itai and Bleshner discloses communication schedule but Itai, Belshner and Garcia differs from claimed invention in not specifically teaching wherein each of the plurality of compatible communication nodes within the at least one communication schedule is provided in serial fashion. However, Elizondo discloses that the communications network 10 may comprise a Wireless Intelligent Network, and the nodes 20, 30, and 40 may comprise MSCs. Typically, the nodes 20, 30, and 40, are engaged in a Transaction Capability Application Part (TCAP) communication transaction wherein messages are sent between the nodes in a serial fashion so as to elicit dynamic response timer regeneration (Col 4 L 14 – 20). Therefore, it is obvious to one having ordinary skill in the art at the time the invention was made that each of the plurality of compatible communication nodes within the at least one communication schedule is provided in serial fashion as per teaching of Elizondo so as to avoid conflicting schedules.

4. Claims 9 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itai et al. European Patent No. EP 1059773 A2 in view of Belshner et al. Pub. No. 20050232224 and further in view of Fuhrmann et al. Pub. No. 20030067873

Regarding Claim 9 and 26, Itai and Belshner differs from claimed invention in not specifically teaching wherein the communication nodes in the wireless communication network maintain independent clocks, which are not synchronized with one another. However, Fuhrmann discloses global clock and the local clock which are not

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synchronized (Para 14 and 15). Therefore, it is obvious to one having ordinary skill in the art at the time the invention was made that the communication nodes in the wireless communication network maintain independent clocks, which are not synchronized with one another as per teaching of Fuhrmann so as to synchronize data based on local clocks rather than global clock.

5. Claims 10 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itai et al. European Patent No. EP 1059773 A2 in view of Belshner et al. Pub. No. 2005/0232224 and further in view of Besset-Bathias et al. Pub. No. 2004/0176098

Regarding Claim 10 and 27, Itai and Belshner discloses wherein determining the communication schedule provides scheduling sufficient to ensure communications with the at least one compatible communication node occur but differs from claimed invention in not specifically teaching further comprising providing a plurality of queues for traffic to send to the at least one compatible communication node and corresponding to a plurality of quality of service levels. However, Besset teaches that the implicit policing is a function that is needed in order to be able to comply with the undertaking made with a user concerning quality of service. If the network becomes heavily loaded, this policing function verifies that the behavior of the user is indeed in compliance with the user's traffic contract in order to ensure that a user whose behavior is illicit (whether deliberately or otherwise) cannot degrade the quality of service supplied to other users (Para 65). Therefore, it is obvious to one having ordinary skill in the art at the time the invention was made that comprising providing a plurality of queues for traffic to send to the at least one compatible communication node and corresponding to a plurality of

quality of service levels as per teaching of Besset so as to provide service to the customer based on quality of service level assigned.

(10) Response to Argument

Appellant's remarks have been fully considered by they are deemed not persuasive for the following reason.

Appellant's arguments of A and B Page 5-7 presented in the introduction and legal standard have been noticed and the detail reason for the argument is presented below.

In response to Appellant's argument C on Page 8 and 9 that claim 5 and 22 are not indefinite under 35 U.S.C 112 second paragraph, for using the term "in serial fashion". Since the Appellant's disclose that the term "in serial fashion" is used in its ordinary meaning simply means that it is done in series (i.e., not in parallel or at the same time), Examiner withdraw 35 U.S.C 112 second paragraph rejection therefore the argument is moot.

In response to Appellant's argument D on Page 9 -11 that Itai and Belschner does not teach or suggest "exchanging scheduling information with at least one compatible communication node" and "determining a communication schedule for communications with the at least one compatible communication node based on the scheduling information", Itai disclose (Para 18) wireless mesh topology network having mutually interconnected nodes with line of sight communication with at least one neighbor. Every node has scheduled slots with which to exchange control information (scheduling information) with each of its neighbor which clearly teaches exchanging

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scheduling information refer to as slots with at least one compatible communication node. Further (Para 18 and 23) disclose that the node receives the request to transmit grants or denies transmission. Part of the grant includes a schedule, selected from the requester's schedule, for when to transmit the data refer to as determining a communication schedule.

In response to Appellant's argument D on Page 10 Itai does not teach or disclose that wireless access network are configured only to communicate with select compatible communication node and refer it to as "at least one compatible communication node", Itai disclose (Para 18) compatible communication node as any node in the mesh topology network which are mutually interconnected, line of sight nodes 12 -19 so long as a node has line of sight communication with at least one neighbor. However, the selecting step as Applicant is arguing is not claimed in the claim limitation. Therefore, Itai teaching reads on claimed limitation (See Para 18) that exchanging scheduling information with at least one compatible communication node which can be any node as long as a node has line of sight communication with at least one neighbor in the wireless communication network.

In response to Appellant's argument D on Page 12 that "combination of Itai and Belschner does not teach or disclose "wherein communication nodes in the wireless communication network independently determine communication schedules with other compatible communication nodes", Itai disclose (Para 20) that when the node communicate with its neighbor node for the request for transmission it is accompanied with some information about when a transmission can be made refer to as determine

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communication schedule with other nodes. Itai differ from the claimed invention in not specifically teaching that communication nodes in the wireless communication network independently determine communication schedules with other compatible communication nodes. However, Belschner disclose (Para 5) interconnecting network nodes coupled to several other node and before being integrated as an active network node, for adaptation of their location communication time schedule to the communication time schedules of at least one other network node prior to being integrated as active network node which is independent communication schedule with other node (Para 25 and abstract).

In response to Appellant's argument D on Page 13 that Claims 6-8, 11-13, 16 and 17 depend from claim 1 and include all the limitation of claim 1 and are patentable. Further, claim 18 is directed to the system claim and is patentable for the same reasons set forth in claim 1. Claim 23-25, 28-30 and 34 depend from claim 18 and include all the limitation of claim 18 and are patentable. Since it is noted that the combination of Itai and Belshner does not contain any deficiencies as described above, thus, the limitation of claims 6-8, 11-13, 16, 17, 23-25, 28-30 and 34 are still rejected by the combination of Itai and Belshner.

In response to Appellant's argument E on Page 13 that claims 2-4, 14, 15, 19-21, 31 and 32 are patentable as they depend from claims 1 and 18 respectively. Since it is noted that the combination of Itai and Belshner does not contain any deficiencies as described above, thus, the limitation of claims 2-4, 14, 15, 19-21, 31 and 32 are still rejected by the combination of Itai, Belshner and Garcia-Luna.

In response to Appellant's argument F on Page 14 that claims 5 and 22 are patentable as they depend from claims 1 and 18 respectively. Since it is noted that the combination of Itai and Belshner does not contain any deficiencies as described above, thus, the limitation of claims 5 and 22 are still rejected by the combination of Itai, Belshner, Garcia-Luna and Elizondo.

In response to Appellant's argument G on Page 14 that claims 9 and 26 are patentable. However, as they depend from claims 1 and 18 respectively. Since it is noted that the combination of Itai and Belshner does not contain any deficiencies as described above, thus, the limitation of claims 9 and 26 are still rejected by the combination of Itai, Belshner and Fuhrmann.

In response to Appellant's argument G on Page 14 that combination of Itai, Belschner and Fuhrmann does not teach or disclose "wherein the communication nodes in the wireless communication network maintain independent clocks, which are not synchronized with one another." However, Fuhrmann disclose (Para 14 and 15) local clock signal which is independent from the global clock signal and they are not synchronized with one another.

In response to Appellant's argument H on Page 15 that claims 10 and 27 are patentable. However, as they depend from claims 1 and 18 respectively. Since it is noted that the combination of Itai and Belshner does not contain any deficiencies as described above, thus, the limitation of claims 10 and 27 are still rejected by the combination of Itai, Belshner and Besset-Bathias.

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Therefore, for the above reasons, the Examiner respectfully submits that ***prima facie*** case of obviousness of the claimed invention has been set forth in the Final Office action and appellant(s) has/have failed to overcome the prima facie case of obviousness. Accordingly, it is believed that the Final rejection is proper and the Board of Patent Appeals and Interferences is therefor respectfully urged to sustain the Examiner's rejections.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/NIZAR SIVJI/

Examiner, Art Unit 2617

Conferees:

/George Eng/

Supervisory Patent Examiner, Art Unit 2617

/Kent Chang/

Supervisory Patent Examiner, Art Unit 2617

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